

REMARKS

This application has been reviewed in light of the Office Action dated September 29, 2003. Claims 1, 6, 10, 15, 19-23, 26-32, 35-38, 50-53, 55, and 56 are presented for examination. Claims 1, 6, 10, 15, 19-23, 26, 29-32, 35-38, and 50-53 have been amended to define still more clearly what Applicants regard as their invention. Claims 55 and 56 have been added to provide Applicants with a more complete scope of protection. Claims 1, 10, 19, 20, 29, 38, 55, and 56 are in independent form. Favorable reconsideration is requested.

Claims 1, 10, 19, 20, 29, and 38 have been provisionally rejected for obviousness-type double patenting, as being unpatentable over Claims 1, 4, 7, 10, 13, 16, and 19-22 of copending U.S. Application No. 09/384,968. Claims 1, 6, 10, 15, 19-23, 26-32, 35-38, and 50-53 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,181,818 (*Sato et al.*)

As shown above, Applicants have amended independent Claims 1, 10, 19, 20, 29, and 38 in terms that still more clearly define what they regard as their invention. Applicants submit that these amended independent claims and new independent Claims 55 and 56, together with the remaining claims dependent thereon, are patentably distinct from the cited prior art for at least the following reasons.

The present invention is directed to an image search apparatus and method for searching an image database that stores a plurality of image data for a desired image. Search methods in conventional systems are classified generally into two methods. First, is a method of storing non-image information, such as keywords, and conducting a search based on such information. Second, is conducting a search, called a similar image search, on the basis of image

feature amounts, such as luminance/color difference information, image frequency, histogram, and the like. When a handwritten illustration is used as a search criteria for a similar image search in conventional systems, a desired image cannot be obtained unless an appropriate illustration is drawn.

The aspect of the present invention set forth in Claim 1 is an image search apparatus for searching an image database for desired image data. The image database contains a plurality of stored image data in correspondence with image feature amounts for each image data of the plurality of stored image data stored in the image database. The image search apparatus includes input means, display means, selection means, image feature amount computing means, and image similarity computing means. The input means input a search condition. The display means displays a plurality of image data, obtained as a result of a search corresponding to the search condition inputted by the input means, of the plurality of stored image data from the image database. The selection means selects image data, designated by a user, from the plurality of image data displayed as a result of the search. The image feature amount computing means computes an image feature amount of the image data selected by the selection means, and image similarity computing means computes an image similarity on the basis of the image feature amount computed by the image feature amount computing means and the image feature amounts of the plurality of stored image data stored in the image database. That is, the image search apparatus displays a plurality of image data as a result of a search, corresponding to an input search condition, of the plurality of stored image data from the image database. A similar image search is then performed using image data, designated by a user, from the plurality of image data that is displayed as the search result. By virtue of this arrangement, an efficient similar image

search can be executed where the user selects only image data from a displayed plurality of image data as a search condition, without having to draw an illustration of an image as a search condition.

The image search apparatus of Claim 1 performs a search for desired image data in a two-step process. In the first step, a plurality of candidate image data for searching a desired image are searched from a database using a search condition. Then, in the second step, desired image data is searched from the database using one candidate image data designated by the user from the plurality of candidate image data displayed by the display means as a second search condition.

Among the notable features of Claim 1 are selecting image data, designated by a user, from the plurality of image data displayed as a search result by the display means, then computing an image feature amount of the image data selected by the selection means, and computing an image similarity on the basis of the image feature amount computed by the image feature amount computing means on the image data selected by the selection means and the image feature amounts of the plurality of stored image data stored in the image database.

Sato et al. relates to an image retrieval method and apparatus. *Sato et al.* discusses an image search using an image feature amount computed from an input image. That is, in the *Sato et al.* system, a user designates and inputs the type of image data to be retrieved, inputs a figure which roughly depicts a partial image present in the image data to be retrieved, and designates the color of the figure using a color palette. As a result of retrieving image data on the basis of the designated image search conditions, image data corresponding to the retrieval results are displayed in the order of higher similarities (Column 7, lines 38-51). In the *Sato et al.*

system, a user is not selecting image data from a plurality of image data displayed as a search result by the display means, and then computing an image feature amount of the image data selected by the selection means and an image similarity on the basis of the image feature amount computed by the image feature amount computing means on the image data selected by the selection means and the image feature amounts of the plurality of stored image data stored in the image database, all as recited in Claim 1. Accordingly, nothing has been found in *Sato et al.* that would teach or suggest selecting image data, designated by a user, from the plurality of image data displayed as a search result by the display means, computing an image feature amount of the image data selected by the selection means, and computing an image similarity on the basis of the image feature amount computed by the image feature amount computing means on the image data selected by the selection means and the image feature amounts of the plurality of stored image data stored in the image database, also all as recited in Claim 1.

Applicants submit that at least for the reasons described above, Claim 1 is patentable over *Sato et al.*

Independent Claims 10 and 19 are method and computer readable memory claims respectively corresponding to apparatus Claim 1, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 1.

The aspect of the present invention set forth in claim 20 is an image search apparatus for searching an image database for desired image data. The image database contains a plurality of stored image data in correspondence with image feature amounts for each image data of the plurality of stored image data in the image database. The image search apparatus includes input means, display means, selection means, image feature amount computing means, and image

similarity computing means. The input means input handwritten information. The display means displays a plurality of image data obtained as a result of a search of the plurality of stored image data in the image database, where the plurality of stored image data is searched on the basis of the handwritten information inputted by the input means. The selection means selects color information of image data designated by a user from the plurality of image data. The image feature amount computing means computes an image feature amount of an image drawn in a drawing area, including the color information of the image data selected by the selection means. The image similarity computing means computes an image similarity on the basis of the image feature amount computed by the image feature amount computing means and the image feature amounts of the plurality of stored image data stored in the image database. That is, the image search apparatus displays a plurality of image data searched on the basis of inputted handwritten information. A similar image search is then performed using an image drawn in a drawing area, including the color information of the image data selected by a user from the plurality of image data. To set or change the color information of an image as a search condition, the user designates a position of a desired color of the image data from the plurality of image data that is displayed. Accordingly, color information of an image as a search condition for a similar image search process can be designated easily by the user having only to select the color information of the image data designated from the displayed plurality of image data. Thus, the user does not have to use a complicated color designation tool using R, G, and B values.

As was the case with the image search apparatus of Claim 1, the image search apparatus of Claim 20 performs a two-step search process. In the first step, a search for a desired image is performed using inputted handwritten information as a first search condition, resulting

in a display of a plurality of image data. In the second search step, desired image data is searched from the image database using one candidate image data, as a second search condition, designated by a user from the displayed plurality of image data.

For reasons substantially similar to those discussed above in connection with Claim 1, nothing has been found in *Sato et al.* that would teach or suggest displaying a plurality of image data searched on the basis of the handwritten information inputted by the input means, and selecting color information of image data designated by a user from the plurality of image data, as recited in Claim 20.

Independent Claims 29 and 38 are method and computer readable memory claims respectively corresponding to apparatus claim 20, and are believed to be patentable for at least the same reasons as discussed above in connection with Claim 20.

New independent Claims 55 and 56 include similar features as those discussed above in connection with Claim 1. Accordingly, Claims 55 and 56 are believed to be patentable for reasons substantially similar to those discussed above in connection with Claim 1.

Applicant has carefully reviewed Claims 1, 4, 7, 10, 13, 16, and 19-22 of copending U.S. Application No. 09/384,968 with regard to the double patenting rejection set forth in the Office Action. None of these claims include any recitation of display means displaying a plurality of image data, corresponding to the input search condition, obtained as a result of a search of the plurality of stored image data from the image database and selection means selecting image data, designated by a user, from the plurality of image data displayed as search results by the display means, as recited in Claim 1. That is, displaying candidate image data corresponding to an input search condition and performing a similar image search by

comparing each image data of the plurality of stored image data in an image database with the selected candidate image data. In contrast, Claims 1, 4, 7,10, 13, 16, and 19-22 of copending U.S. Application No. 09/384,968 merely disclose inputting an image using an input window and comparing the inputted image with image data stored in a storage medium.

For these reasons, Claim 1 is believed clearly patentable over Claims 1, 4, 7,10, 13, 16, and 19-22 of copending U.S. Application No. 09/384,968. As noted above, independent Claims 10, 19, 20, 29, and 38 include similar features as those of Claim 1, and are also believed clearly patentable over Claims 1, 4, 7,10, 13, 16, and 19-22 of copending U.S. Application No. 09/384,968 for reasons substantially similar to those discussed above in connection with Claim 1.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Donald C. Cella", written over a horizontal line.

Attorney for Applicants

Registration No.

26,718

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3801
Facsimile: (212) 218-2200
NY MAIN 396415